APPENDIX 2
Method 2

Step 1 *(see Method 1).*

Step 2 *(see Method 1).*

Step 3 *(see Method 1).*

Step 4 *(see Method 1).*

Step 5 Decomposition of the Source and Decoded images into a *Laplace Pyramid* of N levels constructed in two steps:

- Each level P_n is firstly obtained by ½ Decimation-Filtering (low-pass) of the immediately preceding level (multiresolution pyramid, Figure 4).

  $P_n = F_{1/2}(P_{n-1})$ $\quad n > 0$

  P_0 = original image

- Then from each level Pn is deducted the immediately succeeding level expanded by 2 so as to obtain L_n (Laplace pyramid, Figure 5).

  $L_n = P_n - E_2(P_{n+1}) n < N$

  $L_N = P_N$

This calculation makes it possible to obtain a representation of a multiresolution pyramid P_n in accordance with Figure 4 and a representation of a Laplace pyramid L_n in accordance with Figure 5.

If the Filter $F_{1/2}$ is well chosen, the image L_n is a good approximation of the energy included within a frequency band centred around

$f_n = 1/(n + 1)$.

Finally, two Laplace Pyramids are available: LS_n (Source) and LD_n (Decoded).

Step 6 By the same principle, the multiresolution Pyramid R_n of the Regions image is constructed by replacing $F_{1/2}$ by $G_{1/2}$ ½ Decimation/median Filter. Thus, for each pixel of each level of the Laplace Pyramids (Step 5), the local value of the motion is available.

Step 7 Calculation of the level-to-level inter-Pyramid Differences:

$$Diff_n = LS_n - LD_n$$

Step 8 Application of the *principle of frequency masking* (Texture/Masking):

The relative influence of the activity at the frequency f_n is masked by considerable activity in the higher frequencies ($f_{k<n}$).

The relative local influence of pixel *pi*, $I_n(pi)$ is then defined by:

$$I_n = \frac{E_n}{\sum_{k<n} m(E_k)} \text{ with: } E_n = (Diff_n(pi))^q$$

with q = 2 for example.

Step 9 *Filtering of the* Source and Decoded *Laplace Pyramids.*

Each pixel *pi* of L_n is weighted by the value $H(f_n,v)$, corresponding to the Region(v) to which *pi* belongs in R_n, and by the relative influence I_n.

$$T_n(pi) = I_n(pi) \times H$$

Step 10 Directional Filtering: to take account of the psychovisual directions favoured by the human gaze, it is possible to filter the images T_n by directional filters which favour one direction with respect to others.

Step 11 *Construction of the Map of Disparities or psychovisual Errors:* the multiresolution pyramids P'_n are recomposed:

$$P'_n = E_2(P'_{n+1}) + T_n \quad (n < N)$$

$$P'_N = T_N$$

The Map of disparities corresponds to P'_0.